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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,517	03/23/2000	Zhanhe Shi	CISCO-1254	3821

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EXAMINER
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RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
2665	12

DATE MAILED: 12/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/533,517

Applicant(s)

SHI ET AL.

Examiner

Daniel J. Ryman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☒ Claim(s) 49 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's arguments with respect to claims 1-46 have been considered but are moot in view of the new ground(s) of rejection.

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### ***Information Disclosure Statement***

3. The information disclosure statement filed 6/14/2000 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. There is no copy of McKeown, et al., "The Bay Bridge: A High Speed Bridge/Router."

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***Claim Objections***

4. Claim 49 is objected to because of the following informalities: claim 49 currently depends upon claim 1, and, as such, claim 49 is a repeat of claim 4. From the context, it appears that claim 49 should depend upon claim 31 and not upon claim 1. For the purposes of prior art rejections, Examiner will interpret claim 49 to depend upon claim 31. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 6-8, 11-13, 16-18, 21-23, 26-28, 31-48, and 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffield et al (USPN 6,452,933) in view of Ganz et al (USPN 6,049,549).

7. Regarding claims 1, 11, 21, and 31, Duffield discloses a method and apparatus for controlling congestion in a networking device having a plurality of input interface queues (ref. 20) (col. 2, lines 9-13), where Examiner takes official notice that, although Duffield does not expressly disclose a program, programs are well known in the art as a more flexible way to implement a method compared to hardware, comprising the steps of and means for: estimating the data arrival rate on each of the plurality of input interface queues (col. 2, lines 9-43 and col. 3, lines 13-31) where the estimate of the data arrival rate is the guaranteed bandwidth for the queue; and determining, for each polling round, the quantity of data to be processed from each of

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the plurality of input interface queues each time the input interface queue is polled, using the estimated data arrival rate on each of the plurality of input interface queues (col. 2, lines 9-43 and col. 3, lines 13-54) where the weights are determined by the estimated arrival rates and the weights dictate the amount of data to be processed. Duffield does not expressly disclose determining, for each polling round the sequence in which the plurality of input interface queues should be polled using the estimated data arrival rate on each of the plurality of input interface queues. Ganz discloses, in a polling system, determining, for each polling round, the sequence in which the plurality of inputs should be polled using the estimated data arrival rate on each of the plurality of inputs in order to avoid unnecessarily using bandwidth by excessively polling the inputs (col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15). In Ganz, the estimated data arrival rate is equivalent to “allocated communication resources” (col. 2, lines 27-29 and col. 3, lines 20-34). In addition, although Ganz discloses the polling system is used in conjunction with polling of wireless devices, Ganz also discloses that the polling method can be used for a variety of different systems (col. 14, lines 3-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to determine, for each polling round the sequence in which the plurality of input interface queues should be polled using the estimated data arrival rate on each of the plurality of input interface queues in order to avoid unnecessarily using bandwidth by excessively polling the inputs.

8. Regarding claims 2, 12, 22, and 47, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz discloses that the data arrival rate on each of the plurality of input interface queues is estimated based on the static link capacity of the input interface queue (Duffield: col. 2, lines 9-43).

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9. Regarding claims 3, 13, 23, and 48, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz discloses that the data arrival rate on each of the plurality of input interface queues is estimated based on a dynamically updated measurement (Ganz: col. 2, lines 45-55; col. 2, lines 64-67; col. 3, lines 20-34; col. 10, lines 52-56; and col. 10, line 66-col. 11, line 27).

10. Regarding claims 6, 16, 26, and 51, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz discloses that the networking device is a router (Duffield: abstract and col. 4, lines 6-27) where an “apparatus for routing packets” is taken to be a router.

11. Regarding claims 7, 17, and 27, referring to claims 2, 12, and 22, Duffield in view of Ganz discloses that the networking device is a router (Duffield: abstract and col. 4, lines 6-27) where an “apparatus for routing packets” is taken to be a router.

12. Regarding claims 8, 18, and 28, referring to claims 3, 13, and 23, Duffield in view of Ganz discloses that the networking device is a router (Duffield: abstract and col. 4, lines 6-27) where an “apparatus for routing packets” is taken to be a router.

13. Regarding claims 32, 34, 36, and 52, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz implicitly discloses that the estimating the data arrival rate is performed sequentially with respect to said determining the sequence and the quantity (Duffield: col. 2, lines 9-43 and col. 3, lines 13-31 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15) since the data arrival rate needs to be known in order to determine the sequence and quantity.

14. Regarding claims 33, 35, 37, and 53, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz discloses that the estimating the data arrival rate is performed independently with respect to said determining the sequence and the quantity (Duffield: col. 2, lines 9-43 and col. 3,

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lines 13-31 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15) since, in Duffield, the data arrival rate is set by the allocation of the guaranteed bandwidth where the amount of guaranteed bandwidth is not influenced by the determination of the sequence and quantity.

15. Regarding claims 38, 41, 44, and 54, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz discloses that the rate at which data are processed from each of the plurality of input interface queues is proportional to the data arrival rate on the input interface queue (Duffield: col. 2, lines 9-43 and col. 3, lines 13-31 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15) where the ratio of the data arrival rate to the processing rate, even if not constant, will give the proportional relationship between these two values.

16. Regarding claims 39, 42, and 45, referring to claims 32, 34, and 36, Duffield in view of Ganz discloses that the rate at which data are processed from each of the plurality of input interface queues is proportional to the data arrival rate on the input interface queue (Duffield: col. 2, lines 9-43 and col. 3, lines 13-31 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8, line 17-col. 9, line 63; and col. 14, lines 3-15) where the ratio of the data arrival rate to the processing rate, even if not constant, will give the proportional relationship between these two values.

17. Regarding claims 40, 43, and 46, referring to claims 33, 35, and 37, Duffield in view of Ganz discloses that the rate at which data are processed from each of the plurality of input interface queues is proportional to the data arrival rate on the input interface queue (Duffield: col. 2, lines 9-43 and col. 3, lines 13-31 and Ganz: col. 3, lines 20-34; col. 4, lines 39-44; col. 8,

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line 17-col. 9, line 63; and col. 14, lines 3-15) where the ratio of the data arrival rate to the processing rate, even if not constant, will give the proportional relationship between these two values.

18. Claims 4, 5, 9, 10, 14, 15, 19, 20, 24, 25, 29, 30, 49, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffield et al (USPN 6,452,933) in view of Ganz et al (USPN 6,049,549) as applied to claims 1, 11, 21, and 31 above, and further in view of Hanko et al (USPN 6,438,141).

19. Regarding claims 4, 5, 14, 15, 24, 25, 49, and 50, referring to claims 1, 11, 21, and 31, Duffield in view of Ganz discloses estimating the data arrival rate on each of the plurality of input interface queues (Duffield: col. 2, lines 9-43 and Ganz: col. 2, lines 45-55; col. 2, lines 64-67; col. 3, lines 20-34; col. 10, lines 52-56; and col. 10, line 66-col. 11, line 27). Duffield in view of Ganz does not expressly disclose that the data arrival rate on each of the plurality of input interface queue is estimated using an exponential averaging function based on a constant factor and on the difference in arrival times between a current data packet and a previous data packet into the input interface queue. Hanko discloses having the data arrival rate on each of the plurality of inputs be estimated using an exponential averaging function based on a constant factor and on the difference in arrival times between a current data packet and a previous data packet in order to predict future bandwidths in a manner that allows for any desired statistical measure of data rates (col. 4, lines 44-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an exponential averaging function based on a constant factor and on the difference in arrival times between a current data packet and a previous data



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packet in order to predict future bandwidths in a manner that allows for any desired statistical measure of data rates.

20. Regarding claims 9, 10, 19, 20, 29, and 30, referring to claims 4, 14, and 24, Duffield in view of Ganz in further view of Hanko discloses that the networking device is a router (Duffield: abstract and col. 4, lines 6-27) where an "apparatus for routing packets" is taken to be a router.

***Conclusion***

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gopal et al (USPN 5,889,963) see entire document which pertains to polling interactive communication. Jang et al (USPN 6,175,554) see entire document which pertains to processing cells based on predicted load levels. Kamiya et al (USPN 5,974,033) see entire document which pertains to processing cells based on predicted load levels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Daniel J. Ryman  
Examiner  
Art Unit 2665

DJR

Daniel J. Ryman



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